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**Contribution to the Palaearctic species of  
*Mesochorus* GRAVENHORST  
(Hymenoptera, Ichneumonidae, Mesochorinae):  
1. The *M. fulvus*-group**

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**A b s t r a c t :** In this study, the Palaearctic species of the *M. fulvus*-group sensu SCHWENKE (body completely reddish, hind tibiae not distinctly infuscate apically) of the genus *Mesochorus* GRAVENHORST (Hymenoptera, Ichneumonidae, Mesochorinae) are revised. 13 valid taxa are included in this group. All species are described and illustrated, and a key for the *M. fulvus*-group is provided.

Six species are new to science: *Mesochorus caucasicus* nov.sp., *Mesochorus flavoorbitalis* nov.sp., *Mesochorus fulvooides* nov.sp., *Mesochorus lapponator* nov.sp., *Mesochorus propodealis* nov.sp. and *Mesochorus pseudolapponicus* nov.sp. New synonyms are: *Mesochorus fulgurans* CURTIS, 1833 syn.nov. *Mesochorus minowai* UCHIDA, 1929; *Mesochorus laricis* HARTIG, 1838 syn.nov. *Mesochorus georgievi* SCHWENKE, 2004; *Mesochorus pelvis* SCHWENKE, 2002 syn.nov. *Mesochorus pectinellus* HORSTMANN, 2006. *Mesochorus macrophyae* SCHWENKE, 1999 is transferred to the *M. declinans*-group.

**K e y w o r d s :** Ichneumonidae, *Mesochorus*, new species, palaearctic region.

**Introduction**

The genus *Mesochorus* is a very large genus of the subfamily Mesochorinae (Hymenoptera, Ichneumonidae) containing more than 300 taxa in the Western Palaearctic region (YU et al. 2016).

Due to the large size of the genus and a rather uniformity of structure and coloration of many species, an unequivocal determination was almost impossible until W. SCHWENKE revised this genus in the last decades of 20th century. His studies resulted in the description of 206 new *Mesochorus* species. In this main revision (SCHWENKE 1999) he proposed several species-groups, partly defined by structural features and/or host preferences, but usually just by colour patterns (SCHWENKE 1999: 34).

Although the proposed species-groups are by no means natural unities, they can be helpful for the determination of this complex genus. However, the determination keys in his revision are difficult to use due to very short descriptions and an almost complete lack of illustrations. A correct use is even more complicated by the fact that SCHWENKE estimated many important morphological features (such the relations of length of ovipositor sheaths to hind metatarsi, length of temples related to eyes, size of lateral ocelli etc.) by eye-ball guessing but did not measured these relations.

In his revision, he proposed the *fulvus*-group of *Mesochorus* and included nine Western Palaearctic species. This group was defined by the following colour pattern: Head, mesosoma and metasoma completely reddish (at most with indistinct brownish coloration of basal tergites) and hind tibiae not or only slightly and indistinctly darkened apically. HORSTMANN (2006) revised several species of the *M. fulvus*-group, proposed some synonymies and described three new species in this group.

Here, I present a new revision of the *fulvus*-group of *Mesochorus* GRAVENHORST from the Palaearctic region, with detailed descriptions and illustrations of the included taxa.

### Material and methods

For this revision, I was able to study some larger collections of *Mesochorus*, mainly collected in Europe. The collection from St. Petersburg (coll. D. Kasparyan) and my own collection also contained material from Siberia and Far East Russia which was included in this revision. For the distributional and hosts records I only mentioned the studied material, new distributional records are marked with an asterisk.

For the measurements the following relations were used: Length of flagellomeres was measured in lateral view (length of 1<sup>st</sup> flagellomeres without anelli). Length of temples and width of eyes were measured from dorsal; facial width and combined length of face and clypeus from frontal, and length and width of femora, metatarsi and ovipositor sheaths in lateral view. The measurements of the pterostigmata were often disturbed by more or less developed folds of the frontal wing margins, so the relations could not always be estimated correctly. The pectination of claws is often difficult to see (especially in basal parts of the claws) and would usually require preparation and further analysis with a compound microscope (see VIKBERG & VARDAL 2017). Here, I noted the visible pectination of the hind claws (usually the outer ones) seen in a stereo microscope with 70x magnification. For the description of the punctures of body parts the following relations were used: scattered punctures - distances larger than diameter of punctures; moderately dense punctures - diameter of punctures approximately as their distance; dense punctures- punctures larger than their distances. The length of claspers (stylets sensu SCHWENKE) in males are measured without the basal bodies.

The following indices were used in the descriptions: OOD - distance of lateral ocelli to eyes in relation to their diameter; MI - length of malar spaces related to width of mandibular bases.

For the measurements below I used an Olympus SZX 7 stereo microscope with dividing eyepiece. The figures were taken with an Olympus SC 30 CCD-camera using the AnalySIS getIT and Helicon Focus Pro softwares and processed with the Microsoft Office Picture manager.

### Key of the Palaearctic species of the *fulvus*-group of *Mesochorus* GRAVENHORST

♀♀

1	Pterostigmas brown, usually with paler proximal and distal edges. ....	2
-	Pterostigmas hyaline, yellowish or pale hyaline-ochreous. ....	4

2 Ocelli small, OOD c.1.4 (fig. 57). Hind claws with about five long teeth (fig. 59). Mesopleura densely punctate. 2<sup>nd</sup> tergite wider than long. Ovipositor sheaths blackish..... *M. lappanator* nov.sp.

- Ocelli large, OOD <1 (fig. 63). Mesopleura with scattered punctures ventrally. 2<sup>nd</sup> tergite longer than wide..... 3

3 Lower mandibular teeth distinctly larger than the upper ones (fig. 60). Hind claws with six densely spaced basal teeth (fig. 62). Hind tibiae narrowly and indistinctly infuscate at apex. OOD c.0.8 (fig. 63). Russia (Far East)..... *M. pseudolapponicus* nov.sp.

- Mandibles with equal teeth (fig. 52). Hind claws with 2-3 short basal teeth. Ocelli very large, OOD c.0.6. Hind tibiae not infuscate apically..... *M. lapponicus* THOMSON, 1885

4 Lower mandibular teeth larger than the upper ones (figs 14, 29). Ovipositor sheaths slender, length >7.5x width. Ocelli smaller, OOD at most 1.0 (figs 16, 26, 31)..... 5

- Mandibular teeth of equal size. Ovipositor sheaths variable. Ocelli usually larger, OOD often >1.0..... 7

5 Ocelli rather large, OOD c.1.0 (fig. 16). Lower mandibular teeth slightly larger than the upper ones. Area superomedia very long and slender, length c.3.3x width (fig. 15)..... *M. fulgorator* HORSTMANN, 2006

- Ocelli smaller, OOD 1.6-1.8 (figs 26, 31). Lower mandibular teeth distinctly longer than the upper ones. Area superomedia wider, length 2.1-2.2x width (fig. 30)..... 6

6 Area basalis stalked apically, area petiolaris wider than long (fig. 32). Face not widened, width 1.1x length of clypeus+face. Distal fore tarsomeres stouter, length c.2.3x width..... *M. heterodon* HORSTMANN, 2006

- Area basalis trapezoid, not stalked apically; area petiolaris longer than wide. Face very wide, width 1.2x length of clypeus+face (fig. 25). Distal fore tarsomeres slender, length c.3.2x width..... *M. fulvooides* nov.sp.

7 Genal carinae reaching the hypostomal ones close to mandibular bases (distance c.0.3x length of malar spaces. Distal tarsomeres slightly swollen, length c.2.7x width (fig. 3)..... *M. agnellonis* SCHWENKE, 1999

- Genal carinae reaching the hypostomal ones far from mandibular bases (distance >0.5x length of malar spaces). Apical tarsomeres differing ..... 8

8 Propodeum - seen from lateral - strongly arched (fig. 48). Area petiolaris large, longer than wide, length about half the length of propodeum (fig. 47). Hind claws slender and long, with 5-6 densely spaced teeth in the basal half. Sides of face slightly divergent ventrally (fig. 46) ..... *M. propodealis* nov.sp.

- Propodeum roundly sloping to apex. Area petiolaris distinctly shorter than half the length of propodeum ..... 9

9 Ocelli smaller, OOD 0.8-1.0 (fig. 12). Face often two-coloured; mandibles, genae and ventral facial orbits cream-yellow or yellowish, face reddish. ..... 10

- Ocelli very large, OOD 0.5-0.7 (fig. 22). Face reddish, usually without distinct cream-yellow orbits..... 12

10 Face narrower, width c.0.9x eye length. Smaller, body length 5-6 mm. Distal fore tarsomeres slender (fig. 7) ..... *M. britannicus* SCHWENKE, 1999

- Face wide, width 1.0-1.1x eye length. Usually larger, body length 6-8 mm ..... 11

11 Distal fore tarsomeres slightly swollen, length 2.5-2.6x width (fig. 11). Temples moderately narrowed behind eyes (fig. 12). Occipital carina complete medially..... *M. flavoorbitalis* nov.sp.

- Distal fore tarsomeres slender, length c.3x width. Temples strongly narrowed behind eyes (fig. 68). Occipital carina shortly interrupted medially. ..... *M. caucasicus* nov.sp.

12 Ovipositor sheaths very short, length <5x height (fig. 44). Hind claws with long teeth (fig. 43), strongly bent at apex. Subbasal cells of front wings almost bare in proximal half (fig. 40) ..... *M. pelvis* SCHWENKE, 2002

- Ovipositor sheaths longer, length >6x height (figs 24, 38). Hind claws sometimes with finer pectination, less strongly bent apically. Subbasal cells of front wings at least with scattered hairs in proximal half ..... 13

13 Hind claws with strong teeth over whole length (fig. 23). Distal fore tarsomeres slightly swollen, length 2.4-2.6x width (fig. 20) ..... *M. fulgorans* CURTIS, 1833

- Hind claws with fewer basal teeth (fig. 36). Distal fore tarsomeres slender, length c.2.8-3x width (fig. 37) ..... *M. laricis* HARTIG, 1838



(for *Mesochorus caucasicus* nov.sp., *M. fulvooides* nov.sp., *M. lapponator* nov.sp. and *M. pseudolapponicus* nov.sp. unknown)

1 Pterostigmas brownish. Claspers pointed apically ..... *M. lapponicus* THOMSON, 1885

- Pterostigmas hyaline or hyaline-ochreous ..... 2

2 Claspers pointed apically (fig. 51). Propodeum - seen from lateral - strongly arched (fig. 48). Area petiolaris large, its length about half the length of propodeum ..... *M. propodealis* nov.sp.

- Claspers blunt or slightly clubbed apically. Propodeum rounded. Area petiolaris distinctly shorter than half the length of propodeum ..... 3

3 Lower mandibular teeth larger than the upper ones. Area superomedia very slender, length >3x width (fig. 15) ..... *M. fulgorator* HORSTMANN, 2006

- Mandibles with equal teeth. Area superomedia stouter, length <2.7x width ..... 4

4 Claws long and strongly falcate apically (fig. 42). Subbasal cells of front wings bare in proximal half (fig. 40) ..... *M. pelvis* SCHWENKE, 2002

- Claws normally bent. Subbasal cells of front wings with at least scattered hairs ..... 5

5 Genal carinae reaching the hypostomal ones close to mandibular bases. Hind femora slender, about 6x as long as wide ..... *M. agnellonis* SCHWENKE, 1999

- Genal carinae reaching the hypostomal ones far from mandibular bases. Hind femora usually stouter ..... 6

6 Ocelli smaller, OOD 0.8-1.2 (fig. 12) ..... 7

- Ocelli larger, OOD 0.5-0.7 (fig. 22) ..... 8

7 Temples roundly narrowed behind eyes, length 0.5-0.6x eye width. OOD 0.8-1.0. Face narrower, width 0.8x eye length, usually with parallel sides ..... *M. britannicus* SCHWENKE, 1999

- Temples slightly widened behind eye, narrowed apically, length c.0.8x eye width. OOD 1.2. Face wide, width 1.0x eye length, with slightly divergent sides ventrally ..... *M. flavoorbitalis* nov.sp.

8 Temples longer, length 0.8-1.0x eye width. Claspers longer, length c.1.4x length of 2<sup>nd</sup> hind tarsomeres ..... *M. laricis* HARTIG, 1838

- Temples shorter, strongly rounded behind eyes. Claspers shorter, c.1.1-1.2x length of 2<sup>nd</sup> hind tarsomeres ..... *M. fulgorans* CURTIS, 1833

### Description of species

#### *Mesochorus agnellonis* SCHWENKE, 1999: 70 (figs 1-4)

H o l o t y p u s : (♀) Italia Piemonte Pontechianale CN Colle Agnello m 2050, 2.VIII.1986 Scaramozzino (ZSM), type studied.

D e s c r i p t i o n : ♀: Body length 4.5-5.5 mm. Flagella with 35-37 segments; 1<sup>st</sup> flagellomeres length 7.5x width and 0.64x eye length, 2<sup>nd</sup> flagellomeres length 5.0x width, preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.5x eye width. Ocelli very large, OOD 0.5-0.7. Face with parallel sides,

width 1.0x length of clypeus+face and 0.8x eye length, punctate. Frons almost smooth. MI 0.3. Mandibles with equal teeth. Malar spaces, ventral 0.3 of facial orbits and mandibular bases finely striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones close to mandibular bases (distance c.0.3x length of malar spaces). Pronotum with very superficial punctures, almost smooth; mesoscutum with fine and moderately dense punctures apico-medially and fine superficial punctures laterally; mesopleura with fine dense punctures dorsally and with coarse scattered punctures ventrally; metapleura with moderately dense superficial punctures. Area basalis slender, triangular to trapezoid, length c.2x width; area superomedia length 2.4x width and 1.3-1.5x length of area petiolaris, costulae in frontal 0.3-0.35; area petiolaris length 1.1x width. femora length 4.9-5.6x height; hind metatarsi short, length 0.41x length of hind tibiae; hind claws short, with short basal teeth; distal fore tarsomeres slightly swollen, length 2.7x width. Areolets pointed, oblique, 2<sup>nd</sup> recurrent veins proximal to their middle; nervuli interstitial; postnervuli intercepted in basal 0.2-0.3; pterostigma length 3.6x width, radial veins in distal 0.65. 1<sup>st</sup> tergite length 3.0x width; postpetiolus length 1.4x width, smooth; 2<sup>nd</sup> tergite length 0.95x width; thyridia large, roundish. Ovipositor sheaths length 5.8-6.3x height and 0.8-0.9x length of hind metatarsi.

Colour: Reddish. Ocellar space and frons usually brownish to blackish medially. Flagella more or less infuscate apically. Mesoscutum with three more or less distinct reddish-brown longitudinal stripes. Pterostigmata hyaline-ochreous, margins slightly darker.

♂: Flagella with 35-39 segments. OOD 0.9. Mesopleura with rather dense or scattered punctures. Areae basalis and superomedia sometimes confluent. Legs slender; hind femora length 5.9-6.1x width. Claws without distinct teeth. Clasper stab-shaped, slightly clubbed apically, length 1.0-1.2x length of 2<sup>nd</sup> hind tarsomeres.

H o s t s unknown.

D i s t r i b u t i o n : Austria\*, Czech Republic (Moravia)\*, Italy, Kirgizstan\*, Russia (Far East)\*.

### ***Mesochorus britannicus* SCHWENKE, 1999: 71 (figs 5-8)**

H o l o t y p u s : (♀) Oxford 7.81, C 12 Denis OWEN (American Entomological Institute), type not studied.

D e s c r i p t i o n : ♀: Body length 5.5-7.5 mm. Flagella with 37-41 segments, preapical flagellomeres c.2-2.5x longer than wide; 1<sup>st</sup> flagellomeres length 6.0x width and 0.66x eye length; 2<sup>nd</sup> flagellomeres length 4.2x width. Temples strongly and almost linearly narrowed behind eyes, length c.0.45-0.55x eye width. OOD 0.8-1.0. Face densely and coarsely punctate, width 1.0-1.1x length of clypeus+face and 0.8-0.9x eye length, with parallel sides. Clypeus with scattered punctures. Mandibels with two equal teeth. MI 0.3-0.4. Malar spaces, mandibular bases and ventral 0.3x of facial orbits striate. Occipital carina complete, rarely obsolete medially. Genal carinae reach the hypostomal ones far from mandibular bases (distance to bases c.0.7-1x length of malar spaces). Mesosoma densely pilose. Mesoscutum with scattered superficial punctures laterally and coarse dense punctures caudal-medially; mesopleura with fine and moderately dense punctures dorsally and with fine scattered punctures ventrally; metapleura with scattered superficial punctures. Area basalis narrowly trapezoid or rectangular, 2-2.5x longer than wide, rarely confluent with area superomedia, rarely with apical stalk; area superomedia slender, length c. 3.2-3.5x width and 1.85x length of area petiolaris, costulae in frontal

0.3; area petiolaris length 0.85x width. Hind femora length 5.3x height; hind metatarsi length 0.5x length of hind tibiae; apical fore tarsomeres not swollen, length 2.6-2.7x width; hind claws with rather short basal teeth, middle teeth longest. Areolets pointed, oblique, 2<sup>nd</sup> recurrent veins proximal to their middle, nervuli interstitial; pterostigma length 3.7x width, radial veins in their distal 0.67. 1<sup>st</sup> tergite length 2.9x width; postpetiolus length 1.35x width, smooth; 2<sup>nd</sup> tergite length 1.05x width; thyridia large, roundish. Ovipositor sheaths densely pilose, slightly sabre-shaped, length 5.6-6.3x height and 0.75-0.8x length of hind metatarsi, moderately narrowed in apical 0.4.

Colour: Red. Head reddish; mandibular bases, malar spaces and ventral facial orbits usually cream-yellowish; ocellar field often more or less brownish. Mesosoma reddish; mesoscutum with two lateral and one fronto-medial reddish-brown longitudinal stripes; scutellum yellowish-red. Metasoma reddish; 1<sup>st</sup> and 2<sup>nd</sup> tergites slightly darker red. Legs reddish-yellow. Pterostigmata hyaline.

♂: Body length 6.5-7.5 mm. Flagella with 37-41 segments. Temples strongly but roundly narrowed behind eyes, length 0.55x eye width. OOD 0.8-1.0. Hind femora length c.5.4x height. Clasper stab-shaped, slightly clubbed apically, length 1.1-1.2x length of 2<sup>nd</sup> hind tarsomeres. Structure and coloration as described for the ♀.

H o s t s : *Eulithris populata* (LINNAEUS, 1758) (Lep. Geometridae) via *Cryptopimpla* sp. (Hym. Ichneumonidae).

D i s t r i b u t i o n : Austria\*, Bulgaria\*, Germany\*, Kirgizstan\*, Norway, Russia\* (Tver and Arkhangelsk regions), Sweden\*, United Kingdom.

### *Mesochorus caucasicus* nov.sp. (figs 65-69)

H o l o t y p u s : (♀) Russia: North Caucasus, Stavropol Terr.: Karachaevo-cherkessiya, Teberdinskij Natural Reserve, 10 km S of Archyz, valley of Kyzgych River, 2.VII.1976, leg. D. Kasparyan (St. Petersburg).

D e s c r i p t i o n : ♀: Body length 7 mm. Flagella with 47 segments; 1<sup>st</sup> flagellomeres length 6x width and 0.73x eye length; 2<sup>nd</sup> flagellomeres length 3.8x width, preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.55x eye width. OOD 1.2. Face wide, with slightly divergent sides ventrally, width c.1.2x length of clypeus+face and c.1.0x eye length, coarsely punctate. Frons and clypeus smooth, with scattered punctures. MI 0.2. Mandibles with two equal teeth. Malar spaces distinctly striate. Occipital carina shortly interrupted medially. Genal carinae reach the hypostomal ones far from mandibular bases. Pronotum with fine granulation and very superficial punctures; mesoscutum with dense coarse punctures caudal-medially and with superficial punctures laterally; mesopleura with fine dense punctures dorsally and scattered punctures ventrally; metapleura with fine and moderately dense punctures. Hind femora length 5.7x height; hind metatarsi length c.0.47x length of hind tibiae; hind claws with 5-6 rather short teeth in basal 2/3; distal fore tarsomeres slender, length c.3x width. Areolets pointed; 2<sup>nd</sup> recurrent veins slightly distal to their middle; nervuli interstitial; postnervuli intercepted in basal 0.3; pterostigma length c.3.3x width, radial veins in their distal 0.7. 1<sup>st</sup> tergite length 3.4x width; postpetiolus length 1.8x width, smooth; 2<sup>nd</sup> tergite length 1.3x width. Ovipositor sheaths pilose, length 7.2x height and 0.9x hind metatarsi length, slightly narrowed apically, not bent apically.

Colour: Yellowish-brown (including ocellar space and ovipositor sheath). Palps, mandibles except teeth, genae, clypeus, wide facial and frontal orbits, tegulae, hind edges

of pronotum, wing bases, fore and middle coxae and trochanters cream-yellow. Mesoscutum with an indistinct brownish stripe frontal-medially. 2<sup>nd</sup> tergite with some brownish-red suffusion laterally. Pterostigmata hyaline-ochreous.

Males and hosts unknown.

Distribution: Russia (Caucasus).

***Mesochorus flavoorbitalis* nov.sp. (figs 9-13)**

Holotype: (♀) TR Burdur 1650m Dirmir, 07.07.2004, leg. J. Kolarov (Munich).

Paratypes: (♀) similar label (Munich); (♀) Kirgisistan, Alaj Gebirge, Majdan-Schlucht, 2000-3000 m, 10.-11.VII.1997, leg. W. Dolin (Munich); (♂) Turkey: Mugla, Univ. campus, 700 m, 37°09'N 28°22'E SW-PT, Bartak + K, 1-10.V.2013 (Linz).

Description: ♀: Body length 6-6.5 mm. Flagella with 40-44 segments; 1<sup>st</sup> flagellomeres length 5.8-6.1x width and 0.67x eye length; 2<sup>nd</sup> flagellomeres length 3.5-3.7x width. Temples moderately and roundly narrowed behind eyes, length 0.75x eye width. OOD 0.9-1.0. Face with coarse dense punctures, wide, sides slightly divergent ventrally, width 1.25-1.3x length of clypeus+face and 1.0-1.1x eye length. Clypeus with scattered punctures. Frons smooth, with scattered punctures; vertical orbits distinctly punctate. MI 0.2. Mandibles with two equal teeth. Malar spaces distinctly striate. Occipital carina complete medially (sometimes weak). Genal carinae reach the hypostomal ones far from mandibular bases. Mesoscutum densely punctate caudally, with superficial punctures laterally; mesopleura with coarse dense punctures; metapleura with fine and moderately dense punctures. Area basalis trapezoid, length 1.5x width, confluent with area superomedia; area superomedia length c.1.8x width and 1.35x length of area petiolaris, costula in the middle; area petiolaris length 0.9-1.0x width. Hind femora length 4.3-5.3x height; hind metatarsi length 0.5x length of hind tibiae; hind claws with 5-6 long teeth in basal 2/3; distal fore tarsomeres slightly swollen, length 2.5-2.6x width. Areolets shortly stalked; 2<sup>nd</sup> recurrent veins proximal to their middle; nervuli interstitial; postnervuli intercepted in basal 0.3-0.4; pterostigma length 3.1-3.2x width, radial veins in their distal 0.7. 1<sup>st</sup> tergite length 2.7x width; postpetiole length 1.5x width, sometimes with few rugae; 2<sup>nd</sup> tergite length 0.9x width. Ovipositor sheaths length 6.3-7.5x height and 0.9x length of hind metatarsi.

Colour: Yellowish-red (including ocellar space and ovipositor sheaths). Palps, mandibles except teeth, genae, clypeus, wide facial and frontal orbits, tegulae, hind edges of pronotum, wing bases, fore coxae and trochanters cream-yellow. Pterostigmata hyaline-ochreous, margins slightly darker.

♂: Body length 6.5 mm. Flagella with 41 segments. Temples wide, slightly widened behind eyes, and moderately narrowed apically, length c.0.8x eye width. OOD 1.2. Hind femora length c.4.9x height. Claspers long, stab-shaped, slightly clubbed apically, length c.1.3x length of 2nd hind tarsomeres.

Colour: Yellowish-red. Palps, mandibles except teeth, clypeus, face, inner orbits, malar spaces and genae yellow. Frontal margin and hind edges of pronotum, tegulae, subtegular ridges and wing bases cream-yellow. Legs reddish-yellow; fore and middle coxae and all trochanters pale-yellow. Pterostigmata hyaline-ochreous.

Hosts unknown.

Distribution: Kirgizistan, Turkey.

***Mesochorus fulgurans* CURTIS, 1833: plate 464 (figs 18-24)**

H o l o t y p u s : (♀) without original label (Coll. CURTIS/Melbourne), type not studied.

syn. *Cryptus (Mesochorus) fulgurans* HALIDAY, 1838: 114, preoccupied by CURTIS 1833.

Lectotypus: (♀) *fulgurans* (Dublin).

syn. *Mesochorus pectinipes* THOMSON, 1886: 336, preoccupied by BRIDGMAN 1883.

Lectotypus: (♀) Scan (Lund).

syn. *Mesochorus fulvus* THOMSON, 1886: 336.

Lectotypus: (♀) Pål (Lund), synonymized by HORSTMANN 2006: 1462.

syn. *Mesochorus suecicus* DALLA TORRE, 1901: 58 (nom. nov. for *M. pectinipes* THOMSON), synonymized by HORSTMANN 2006: 1462.

syn. nov. *Mesochorus minowai* UCHIDA, 1929.

T a x o n o m i c a l r e m a r k : I had the opportunity to study Japanese material (from Niigata Pref., Sado island) determined as *Mesochorus minowai* UCHIDA. The specimens belong to *M. fulgurans* CURTIS. I have not seen the type of *M. minowai* UCHIDA yet, but the pictures of the type material provided by K. KONISHI are also similar to *M. fulgurans*. I therefore synonymize both species here.

D e s c r i p t i o n : ♀: Body length 5.3-7.0 (-10.5) mm. Flagella with 40-46 segments; 1<sup>st</sup> flagellomeres length 6.1x width and 0.6x eye length; 2<sup>nd</sup> flagellomeres length 4.1x width; preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.4-0.5x eye width. Ocelli very large, OOD 0.45-0.65. Face width 1.05x length of clypeus+face and 0.8x eye length, with parallel sides. MI 0.2-0.3. Mandibles with two equal teeth. Malar spaces and lower 0.2 of facial orbits striate, sometimes also mandibular bases. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases; hypostomal carinae narrow. Mesoscutum with coarse and dense punctures caudal-medially and with superficial punctures laterally, mesopleura with fine dense punctures dorsally and moderately dense and coarse punctures ventrally; metapleura with fine and moderately dense punctures. Area basalis trapezoid or rectangular, pointed or with short stalk apically; area superomedia length 1.7-2.2x width and 1.75x length of area petiolaris; area petiolaris length 0.8x width. Hind femora length 5.0x height; hind metatarsi length 0.49x length of hind tibiae; hind claws completely pectinate, with strong and long teeth; distal fore tarsomeres moderately swollen, length c.2.3-2.5x width. Areolets pointed-sessile, oblique; 2<sup>nd</sup> recurrent veins usually in or proximal to their middle; nervuli interstitial, sometimes slightly antefurcal; pterostigma length 3.5x width. 1<sup>st</sup> tergite length 2.8-3.0x width; postpetiole length 1.3-1.4x width, smooth; 2<sup>nd</sup> tergite length 1.3x width; thyridia large, transversal-oval. Ovipositor sheaths length 5.5-6.8x width and 0.65-0.77x length of hind metatarsus.

Colour: Reddish including ocellar space and ovipositor sheaths. Palps, mandibles except teeth, often inner orbits, genae, tegulae, wing bases, fore coxae and trochanters yellowish. Sometimes median lobe of mesoscutum slightly brownish frontally. Pterostigmata pale yellowish-brown, margins slightly darker.

♂: Flagella with 41 segments. Temples strongly narrowed behind eyes, length c.0.5x eye width. Hind femora length 5.7 height. 2<sup>nd</sup> tergite length 1.2x width. Hind claws without visible teeth. Claspers slender, apically blunt, not thickened, length 16x width, length c.1.1-1.2x length of 2<sup>nd</sup> hind tarsomeres. Colour as described for the ♀.

**H o s t s :** *Abraxas grossulariata* (LINNAEUS, 1758) (Lep. Geometridae) via *Hyposoter tricolor* (RATZEBURG, 1844) (Hym. Ichneumonidae).

**D i s t r i b u t i o n :** Armenia\*, Austria, Czech Republic, Germany, Italy, Japan, Kirgizstan\*, Liechtenstein\*, Russia including Far East, Sweden, Ukraine.

***Mesochorus fulgorator* HORSTMANN, 2006: 1464-1465 (figs 14-17)**

**H o l o t y p u s :** (♀) Pälviö (Lund), type not studied.

**D e s c r i p t i o n :** ♀: Body length 7-8 mm. Flagella with 43-44 segments; 1<sup>st</sup> flagellomeres length 6.5-7.3x width and 0.7x eye length; 2<sup>nd</sup> flagellomeres length 4.4-5.0x width; preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.6x eye width. OOD 0.65-0.85. Sides of face parallel or slightly divergent ventrally, width of face 1.1-1.15x length of clypeus+face and 1.0x eye length. MI 0.4. Lower mandibular teeth slightly larger and longer than the upper ones. Malar spaces, ventral 0.3 of facial orbits and mandibular bases finely striate. Genal carinae reach the hypostomal ones far from mandibular bases. Mesoscutum with dense coarse punctures caudal-medially and with superficial punctures and strong shine laterally; mesopleura with fine dense punctures dorsally and fine scattered punctures ventrally; metapleura with fine superficial punctures. Area basalis slender, trapezoid, length c 2.5x width; area superomedia very slender, length 3.3x width; area petiolaris short, length 0.7x width. Hind femora length 4.3-4.8x height; hind metatarsi length 0.54x length of hind tibiae; hind claws slender, with 3-4 short basal teeth; distal fore tarsomeres slender, length c.2.8-3.0x width. Areolets pointed-sessile or shortly stalked, oblique; 2<sup>nd</sup> recurrent veins usually in their middle; nervuli interstitial; postnervuli intercepted at basal 0.4; pterostigma length c.3.7x width, radial veins in their distal 0.65. 1<sup>st</sup> tergite length 3.0-3.5x width; postpetiole smooth, length 1.4-1.8x width; 2<sup>nd</sup> tergite length 1.2-1.45x width; thyridia roundish. Ovipositor sheaths length 7.7-7.9x width and 0.68-0.7x length of hind metatarsi.

**Colour:** Reddish including ocellar space and ovipositor sheaths. Palps, mandibles except teeth, genae, hind edges of pronotum, tegulae, wing bases, fore and middle coxae and all trochanters yellowish. Pterostigmata very pale ochreous, margins almost not darker.

♂: Body length 7.5 mm. Flagella with 44 segments. 1<sup>st</sup> tergite length 3.6x width; 2<sup>nd</sup> tergite length 1.6x width. Claspers stab-shaped, apically blunt, not distinctly clubbed, length c.17x width and 1.1-1.4x length of 2<sup>nd</sup> hind tarsomeres.

**H o s t s** unknown.

**D i s t r i b u t i o n :** Byelorussia\*, China (Yunnan)\*, Germany, Russia\* (St. Petersburg distr.), Sweden, Turkey\*, Ukraine\*, United Kingdom\*.

***Mesochorus fulvooides* nov.sp. (figs 25-28)**

**H o l o t y p u s :** (♀) Traunstein 13.7.1960; *Mesochorus fulgorans* Curt. R. Bauer ♀ (Munich).

**T a x o n o m i c a l r e m a r k :** This species is closely related to *M. heterodon* HORSTMANN. It differs by its wider face, trapezoid area basalis, longer area petiolaris, and slenderer distal fore tarsomeres.

**D e s c r i p t i o n :** ♀: Body length 7 mm. Flagella with 44 segments; 1<sup>st</sup> flagellomeres slender, length c.8x width and 0.85x eye length; 2<sup>nd</sup> flagellomeres length c.5.0x width.

Temples moderately narrowed behind eyes, length 0.7x eye width. Ocelli small, OOD 1.5-1.6. Face very wide, sides slightly divergent ventrally, width 1.22x length of clypeus+face length and 1.15x eye length, with coarse punctures. Frons finely granulate and with some scattered punctures. MI 0.6. Lower mandibular teeth distinctly larger than the upper ones. Genae and mandibular bases finely striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases. Pronotum punctate, frontal margin smooth; mesoscutum with coarse dense punctures caudally and with fine scattered punctures laterally; mesopleura with moderately dense punctures; metapleura with fine and moderately dense punctures. Area basalis trapezoid, length 1.6x width; area superomedia length 2.2x width, costulae in frontal 0.35; area petiolaris length 1.2x width. Hind femora length 5.8x height; hind claws slender, with 3 short teeth at bases; distal fore tarsomeres slender, length c.3.3 width. Areolets pointed sessile, very oblique; 2<sup>nd</sup> recurrent veins in their middle; nervuli interstitial; postnervuli intercepted at basal 0.35. Frontal margins of pterostigmata folded. 1<sup>st</sup> tergite length 3.3-3.4x width; postpetiolus smooth, length 1.8x width; 2<sup>nd</sup> tergite length 1.24x width. Ovipositor sheaths rather slender, length 8.3x width and 0.8x length of hind metatarsi.

Colour: Reddish including ocellar space. Palps, clypeus, genae, wide inner orbits, hind edges of pronotum, tegulae and wing bases yellow. Pterostigmata very pale ochreous. Ovipositor sheaths dark brownish.

M a l e s and h o s t s unknown.

D i s t r i b u t i o n : Germany.

***Mesochorus heterodon* HORSTMANN, 2006: 1467-1468 (figs 29-32)**

H o l o t y p u s : (♀) Italia Piemonte, La Cassa (Torino), VII.1982, Scaramozzino leg. (Munich), type studied.

D e s c r i p t i o n : ♀: Body length 6-7 mm. Flagella with 43-46 segments, very slender; 1<sup>st</sup> flagellomeres length c.7-7.5x width and 0.8x eye length; 2<sup>nd</sup> flagellomeres length 5x width; preapical flagellomeres c.1.8x longer than wide. Temples moderately narrowed behind eyes, length c.0.75x eye width. OOD 1.5-1.8. Face with slightly convergent sides, width 1.1x length of clypeus+face and 0.95x eye length. MI 0.5-0.6. Lower mandibular teeth more or less longer than the upper ones. Malar spaces and mandibular bases finely striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases. Mesoscutum with dense coarse punctures; mesopleura with dense coarse punctures dorsally and moderately dense punctures ventrally; metapleura with dense but superficial punctures. Area basalis with apical stalk; area superomedia length c.2.1x width and 1.6x length of area petiolaris, costulae in frontal 0.3; area petiolaris length 0.7x width. Hind femora length 4.7x height; hind metatarsi long, length 0.51-0.56x length of hind tibiae; hind claws slender, with 2-3 short basal teeth; distal fore tarsomeres slightly swollen, length 2.3-2.8x width. Areolets pointed-sessile, very oblique; 2<sup>nd</sup> recurrent veins distal to their middle; nervuli interstitial; postnervuli intercepted at basal 0.3-0.35; pterostigma length 3.3x width, radial veins in their distal 0.68. 1<sup>st</sup> tergite length 3.3-3.5x width; postpetiole length smooth, 1.7x width; 2<sup>nd</sup> tergite length 1.2x width. Ovipositor sheaths length 7.5-7.7x width and 0.7-0.73x length of hind metatarsi.

Colour: Reddish including ocellar space. Palps, mandibles except teeth, clypeus, genae,

inner and outer orbits, hind edges of pronotum, tegulae, wing bases, fore and hind coxae and trochanters yellow. Pterostigmata very pale ochreous. Ovipositor sheaths dark brownish.

M a l e s and h o s t s unknown.

D i s t r i b u t i o n : Bulgaria\*, Germany, Italy, Norway\*, Ukraine\*.

***Mesochorus lapponator* nov.sp. (figs 56-59)**

H o l o t y p u s : (♀) Azerbaijan, Zakataly Natural Reserve, base Richuk, 2300 m, oak-beech forest, 25.VIII.1982, leg. D. Kasparyan (St. Petersburg).

D e s c r i p t i o n : ♀: Body length 6 mm. Flagella with tips broken off, slender; 1<sup>st</sup> flagellomeres length 6.4x width and 0.7x eye length; 2<sup>nd</sup> flagellomeres length 4.3x width. Temples moderately and roundly narrowed behind eyes, length 0.75x eye width. Ocelli small, OOD 1.4. Face with parallel sides, width 1.3x length of clypeus+face and 1.0x eye length, densely punctate. Facial orbits with coarse and moderately dense punctures. MI 0.25. Mandibles with two equal teeth. Genae, malar spaces and ventral 0.1 of facial orbits striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases; hypostomal carinae not elevated. Sides of pronotum with scattered fine punctures; mesoscutum with dense coarse punctures caudal-medially and with finer and moderately dense punctures laterally; mesopleura with fine dense punctures dorsally and rather dense coarse punctures ventrally; metapleura with fine, moderately dense punctures. Area basalis rectangular, confluent with area superomedia; area superomedia length 2.3x width, costulae slightly frontal to its middle; area petiolaris about as long as wide. Hind femora length 5.2x height; hind metatarsi long, length 0.54x length of hind tibiae; hind claws with 5 long teeth in the basal 2/3; length of distal fore tarsomeres 2.8x width. Arolets shortly stalked; 2<sup>nd</sup> recurrent veins proximal to their middle; nervuli interstitial; postnervuli intercepted in basal 0.3; pterostigma length 3.0-3.2x width, radial veins in their distal 0.7. 1<sup>st</sup> tergite length 2.8x width; postpetiolus smooth, length 1.5x width; 2<sup>nd</sup> tergite length 0.85x width; thyridia roundish. Ovipositor sheaths completely pilose, length 8x width and 0.75x length of hind metatarsi, narrowed in apical third.

Colour: Yellowish-red including ocellar space. Palps, mandibles except teeth, genae, facial and frontal orbits widely cream-yellow. Hind edges of pronotum, tegulae, and wing bases yellowish. Legs reddish-yellow; hind tibiae yellowish, apical 0.15 (1x width) brownish-red. Pterostigmata brownish, paler proximally. Ovipositor sheaths blackish.

M a l e s and h o s t s unknown.

D i s t r i b u t i o n : Azerbaijan.

***Mesochorus lapponicus* THOMSON, 1885: 336 (figs 52-55)**

Lectotypus: (♀) Lap; *lapponicus* (Lund), type studied.

D e s c r i p t i o n : ♀: Body length 6.5-8 mm. Flagella with 42-46 segments; 1<sup>st</sup> flagellomeres length 6.5x width and 0.64x eye length; 2<sup>nd</sup> flagellomeres length 4x width; preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.5x eye width. OOD 0.7-1.0. Face width 1.05x length of clypeus+face and 0.8-0.9x eye length, punctate, with parallel or slightly convergent sides ventrally. Clypeus

with scattered punctures. MI 0.25-0.3. Mandibles with two equal teeth. Malar spaces, mandibular bases and ventral 0.3 of facial orbits striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases, hypostomal carina slightly elevated. Pronotum largely smooth; mesoscutum with dense and coarse punctures caudal-medially and with dense but finer punctures laterally; mesopleura with dense fine punctures dorsally and moderately dense to scattered punctures ventrally; metapleura with fine scattered punctures. Area basalis trapezoid or rectangular, length 1.7-2x width; area superomedia length 2.1-2.3x width and 2.2x length of area petiolaris, costulae in frontal 0.3-0.4; area petiolaris about as long as wide. Hind femora length 5.1-5.3x height; hind metatarsi length 0.46x length of hind tibiae; hind claws with 3-4 short basal teeth; length of distal fore tarsomeres c.2.6-2.7x width. Areolets pointed-sessile, oblique; 2<sup>nd</sup> recurrent veins in or slightly proximal to their middle; nervuli interstitial; postnervuli intercepted at basal 0.2; pterostigma length 3.0x width, radial veins in their distal 0.7. 1<sup>st</sup> tergite length 3.2-3.6x width; postpetiole smooth, length 1.7x width; 2<sup>nd</sup> tergite length 1.05-1.25x width; thyridia transversal-oval. Ovipositor sheaths length 6.8-8.0x height and 0.72-0.76x length of hind metatarsi, slightly narrowed in apical half.

Colour: Reddish including ocellar space and ovipositor sheaths. Palps, mandibles except teeth, malar spaces, inner orbits, hind edges of pronotum, tegulae, wing bases, fore and middle coxae and trochanters completely and fore and middle femora frontally yellowish. Pterostigmata brown, paler proximally and distally. Ovipositor sheaths yellowish.

♂: Claspers pointed apically, length 1.4x length of 2<sup>nd</sup> hind tarsomeres.

H o s t s unknown.

D i s t r i b u t i o n : Norway, Russia (Karelia), Sweden.

### ***Mesochorus laricis* HARTIG, 1838: 273 (figs 33-38)**

Types missing (HORSTMANN, 1986: 331), interpretation after the original description.

syn. nov. *Mesochorus georgievi* SCHWENKE, 2004: 85.

H o l o t y p u s : (♀) Bulgaria, Stara Planina Mts., Gintsi vill., 1.200 mt; in *Saperda populnea* galls on *Populus tremula*, 17.3.2002, G. Georgiev (Munich), type studied.

T a x o n o m i c a l r e m a r k : I have studied the type of *M. georgievi* SCHWENKE. Head and mesosoma are completely reddish; the metasoma (brownish)-red with slightly darker apical tergites, the colour differences are small. Structure and colour are otherwise similar to *M. laricis* HARTIG, and I found no relevant differences between both species.

D e s c r i p t i o n : ♀: Body length 6.5-8.0 mm. Flagella with 35-48 segments; 1<sup>st</sup> flagellomeres length c.7x width and 0.65x eye length; 2<sup>nd</sup> flagellomeres length 3.8x width. Temples strongly narrowed behind eyes, length 0.55-0.6x eye width. Ocelli very large, OOD 0.6-0.8. Face punctate, with parallel sides or slightly convergent ventrally, width 0.95-1.0x length of clypeus+face and 0.82x eye length. MI 0.4. Malar spaces, ventral 0.4 of facial orbits and bases of mandibles finely striate. Mandibles with two equal teeth. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases. Mesoscutum with fine, moderately dense punctures caudal-medially and with superficial punctures laterally; mesopleura with fine dense punctures

dorsally and moderately dense punctures ventrally; metapleura with fine superficial punctures. Area basalis pointed or shortly sessile or stalked, rarely fused with area superomedia; area superomedia length 2.3-2.8x width and 1.5x length of area petiolaris, costulae basal to its middle; area petiolaris length 1.0-1.2x width. Hind femora length 5.1-5.4x height; hind metatarsi length 0.48x length of hind tibiae; hind claws slender, with 2-4 short basal teeth; distal fore tarsomeres slender, length c.3.0-3.2x width. Arealts pointed-sessile, oblique; 2<sup>nd</sup> recurrent veins in or proximal to their middle; nervuli interstitial or slightly postfurcal (1x width); postnervuli intercepted in basal 0.25-0.4; pterostigma length c.3.2-3.5x width. 1<sup>st</sup> tergite length 2.9-3.5x width; postpetiolus smooth, length 1.6x width; 2<sup>nd</sup> tergite length 1.2-1.5x width; thyridia large, transverse. Ovipositor sheaths completely pilose, length 6.2-7.1x height and 0.7-0.8x length of hind metatarsi.

Colour: Yellowish-red. Ocellar space sometimes more or less fuscous. Palps, mandibles except teeth, malar spaces, genae, sometimes ventral facial orbits, hind edges of pronotum, tegulae, wing bases, fore coxae and trochanters, sometimes also middle coxae yellowish. Hind tibiae sometimes slightly and indistinctly darkened at apex. Flagella more or less darkened distally. Pterostigmata pale ochreous, margins slightly darker. Ovipositor sheaths yellowish-red to reddish-brown.

♂: Flagella with 44 segments. Temples moderately and roundish narrowed behind eyes, length 0.6-0.75x eye width. OOD 0.8-0.9. Hind femora length 5.1-5.2x height. Mesopleura with very scattered punctures. Claspers very slender, apically blunt, not clubbed apically, length 20x width and 1.4x length of 2<sup>nd</sup> hind tarsomeres.

Distribution: Bulgaria\*, Czech Republic \*, Georgia\*, Germany, Norway\*, Portugal\*, Russia\* (Karelia, Far East), Sweden\*, Ukraine, United Kingdom\*, Turkey.

### *Mesochorus pelvis* SCHWENKE, 2002: 91 (figs 39-45)

syn. *Mesochorus hamatus* SCHWENKE, 1999: 71, preoccupied by TOWNES, 1945.

Holotype: (♂) I, TN Riva Rocchetta, 400-800m, 20.5.1982, Haeselb. (Munich), type studied.

syn. *Mesochorus falcatus* SCHWENKE, 1999: 71, preoccupied by DASCH, 1974, synonymized by HORSTMANN, 2006: 1477.

Holotype: (♂) Dessau 4 km SSW, 7.8.86, K.H. ZOERNER; 100/86 Taubeufer (Müncheberg), type studied.

syn. *Mesochorus lunatus* SCHWENKE, 2002: 91 (nom. nov. for *M. falcatus* SCHWENKE), synonymized by HORSTMANN, 2006: 1477.

syn. nov. *Mesochorus pectinellus* HORSTMANN, 2006: 1476-1477.

Holotype: (♀) 38, ex Puppen von Cymatophoridae (Munich), type studied.

Taxonomical remark: This taxon shows some sexual dimorphism in the size of ocelli and the forms of claws. Due to other structural similarities, especially the bare proximal half of the subbasal cells of fore wings, I have no doubt about the above mentioned synonymy of *M. pectinellus*.

Description: ♀: Body length 7-9 mm. Flagella with 35-42 segments; 1<sup>st</sup> flagellomeres length c.6.0-6.2x width and 0.55x eye length; 2<sup>nd</sup> flagellomeres length 3.5-4x width; preapical flagellomeres c.2x longer than wide. Temples strongly narrowed behind eyes, length 0.45-0.5x eye width. Ocelli large, OOD 0.5-0.6. Face with slightly convergent sides, width 1.0-1.1x length of clypeus+face and 0.7x eye length. MI 0.25.

Mandibles with two equal teeth, rarely upper mandibular teeth slightly larger than lower ones. Malar spaces, ventral 0.3 of facial orbits and often bases of mandibles finely striate. Occipital carina complete medially. Genal carinae reach the hypostomal carinae near of mandibular bases (distance c.0.5x malar length). Mesoscutum with fine dense punctures; mesopleura with fine dense punctures dorsally and fine scattered punctures ventrally; metapleura with fine scattered and superficial punctures. Area basalis usually narrowly trapezoid or triangular, length c.1.5x width; area superomedia length 1.5x width and c.1.0x length of area petiolaris, costulae in frontal 0.35; area petiolaris length 1.0-1.1x width. Hind femora length 4.6x height; hind claws with 5 very long teeth, strongly bent apically; distal fore tarsomeres swollen, length 2.2-2.4x width. Areolets pointed-sessile, slightly oblique; 2<sup>nd</sup> recurrent veins in or proximal to their middle; nervuli interstitial or more or less postfurcal; postnervuli intercepted in their basal 0.2-0.25; pterostigma length 3.6x width, radial veins in their distal 0.6; subbasal cells of fore wings completely bare in the proximal half. 1<sup>st</sup> tergite length 2.6-2.7x width; postpetiole length 1.4-1.5x width; 2<sup>nd</sup> tergite length 1.1x width. Ovipositor sheaths length 4.2x height and 0.7-0.75x length of hind metatarsi.

Colour: Pale reddish-brown (including flagella and ovipositor sheaths). Palps, mandibles except teeth, genae, facial orbits, hind edges of pronotum, tegulae and wing bases yellow. Ocellar space brownish, sometimes pale. Pterostigmata pale ochreous, their margins darker.

♂: Body length 6-7.5 mm. Flagella with 35-40 flagellomeres. OOD 0.7-0.85. Temples roundly narrowed behind eyes, length 0.6-0.65 eye width. Mesopleura with fine scattered punctures ventrally. Hind femora length 5.3-5.6x height; hind claws with two basal teeth, strongly falcate apically. Subbasal cells of fore wings completely bare in the basal half. Claspers slender, apically blunt, not clubbed, length 17x width and 1.25-1.4x length of 2<sup>nd</sup> hind tarsomeres. Colour as described for the ♀.

H o s t s : *Cymatophora* sp. (Lep. Drepanidae) via *Rogas* sp. (Hym. Braconidae).

D i s t r i b u t i o n : Bulgaria\*, France\*, Germany, Italy, Japan\*, Russia\* (St. Petersburg district and Far East), Sweden\*, United Kingdom\*.

### *Mesochorus propodealis* nov.sp. (figs 46-51)

H o l o t y p u s : (♀) Russia, East Siberia, Transbaikalia, Karymskaya, right feeder of Ingoda River, 4.VIII.1975, leg. D. Kasparyan (St. Petersburg).

Paratypes: (♀♂) Russia, Kaliningrad Prov., Curonian Spit (=Kurshskaya kosa), 34-35<sup>th</sup> km, Alnus, Betula, litter, 4.VII.1988, leg. A. Khalaim (St. Petersburg); (3♀♀) Russia, East Siberia. Krasnoyarsk, Akademgorodok, betuletum, 28.VII.1988, leg. D. Kasparyan (St. Petersburg and coll. Riedel); (♀) W. Siberia, r. Taz, Krasnoselkup. 17.08.1992, leg. D. Kasparyan (St. Petersburg); (♀) Yakutia, 10 km SSW of Yakutsk, Rechevaya shkola, "kolki" with Betula, Rosa (forest outliers), 13.VII.1990, leg. D. Kasparyan (St. Petersburg); (♂) Mongolia, 100 km E Iulanbatar, 20 km NE Terekz, Tuul riv., 15-21.VII.2003, J. Halada leg. (Linz); (♀) Italia Liguria, Triova (IM), Calla Sauson 26.VII.1986 Scaramozzino legit (Munich); (♀) TR: Artvin, Genya Mt. 28.VII.2004, 1625m, leg. S. Çoruh (Erzurum); (♂) S- Russia, Rostov reg., Veshenskaja, 2.8.2006, E. Khachikov leg. (Linz).

D e s c r i p t i o n : ♀: Body length 7-9.5 mm. Flagella with 41-43 segments; 1<sup>st</sup> flagellomeres length c.6x width and 0.62-0.65x eye length; 2<sup>nd</sup> flagellomeres length 4.0-4.5x width; preapical flagellomeres c.2x longer than wide. Temples roundly but strongly narrowed behind eyes, length 0.5-0.6x eye width. Ocelli large, OOD 0.7-0.9. Face with

parallel or divergent sides ventrally, densely and coarsely punctate, width 1.15x length of clypeus+face and 0.85x eye length. MI 0.2-0.4. Mandibles with equal teeth. Malar spaces and ventral 0.2 of facial orbits finely striate. Occipital carina complete medially. Genal carinae reach the hypostomal ones far from mandibular bases. Mesoscutum with coarse and dense punctures caudal-medially and with dense but superficial punctures laterally; mesopleura with fine dense punctures dorsally and coarse and moderately dense punctures ventrally; metapleura with dense fine punctures. Propodeum - seen from lateral - distinctly angled between frontal horizontal and apical vertical parts, not roundly declined. Area basalis rectangular, usually confluent with area superomedia, c.1.5x longer than wide; area superomedia short, length 2.0x width and 0.7-1.0x as long as area petiolaris, costulae in or slightly frontal to its middle; area petiolaris large, length almost half the length of propodeum and 1.1-1.2x width. Hind femora length 4.7-5.3x height; hind metatarsi length 0.47x length of hind tibiae; hind claws slender, their apices strongly bent, with about 4-5 short and narrowly spaced basal teeth; distal fore tarsomeres very slender, length 3.2-3.4x width. Areolets shortly stalked or pointed and oblique; 2<sup>nd</sup> recurrent veins proximal to their middle; nervuli interstitial or slightly post- or antefurcal; postnervuli intercepted in basal 0.3-0.4; pterostigma length c.3.5-3.6x width, radial veins in their distal 0.63. 1<sup>st</sup> tergite length 2.5-2.7x width; postpetiolus smooth, length 1.3-1.4x width; 2<sup>nd</sup> tergite length 0.95-1.1x width; thyridia roundish. Ovipositor sheaths length 7.1-7.7x height and 0.85-0.9x length of hind metatarsi.

Colour: (Brownish)-red. Palps, mandibles except teeth, genae, wide facial orbits, hind edges of pronotum, tegulae, and wing bases yellow to cream-yellow. Pterostigmata hyaline or hyaline-ochreous.

♂: Body length 7-8 mm. Flagella with 39-41 segments. Hind femora length 5.0x height. Nervuli usually slightly postfurcal. 1<sup>st</sup> tergite length 3.0x width; postpetiolus length 1.7x width. Hind claws with 2-3 short basal teeth. Claspers pointed apically, length 1.3-1.4x length of 2<sup>nd</sup> hind tarsomeres. Otherwise as described for the ♀.

Colour: Reddish. Palps, mandibles, and genae cream-yellow. Mesoscutum yellowish, with two lateral and one median brownish-red stripe; scutellum pale yellow, with brownish-yellow baso-medial spot. Legs reddish-yellow.

H o s t s unknown.

D i s t r i b u t i o n : Italy, Mongolia, Russia (Rostov region, Siberia, Far East), Turkey.

#### *Mesochorus pseudolapponicus* nov.sp. (figs 60-64)

H o l o t y p u s : (♀) Russia, Yakutia, 9-10 km W of Yakutsk, Vilyujskij trakt (path), 22.VII.1970, leg. D. Kasparyan (St. Petersburg).

D e s c r i p t i o n : Body length 6 mm. Flagella with 41 segments, slender; 1<sup>st</sup> flagellomeres length 6.4x width and 0.7x eye length; 2<sup>nd</sup> flagellomeres length 4.5x width; preapical flagellomeres almost 3x longer than wide. Temples moderately and roundly narrowed behind eyes, length 0.65x eye width. OOD 0.8. Face coarsely punctate, with central smoothed ridge, sides slightly divergent ventrally, width 1.1x length of clypeus+face and 0.8x eye length. Clypeus with scattered punctures. MI 0.25. Lower mandibular teeth distinctly larger than the upper ones. Genae, malar spaces and ventral 0.1 of facial orbits striate. Occipital carina shortly interrupted medially. Genal carinae

reach the hypostomal ones far from mandibular bases, hypostomal carinae not elevated. Pronotum largely smooth; mesoscutum with coarse dense punctures caudal-medially and with superficial punctures laterally; mesopleura with finer dense punctures dorsally and with coarse but scattered punctures ventrally; metapleura with fine scattered punctures. Area basalis rectangular, confluent with area superomedia; area superomedia length c.2.3x width and c.2x longer than area petiolaris, costulae in frontal 0.35; area petiolaris about as long as wide. Hind femora length 5.2x height; hind metatarsi length 0.49x length of hind tibiae; hind claws with about 5-6 narrowly spaced basal teeth; distal fore tarsomeres length 2.6x width. Areolets shortly stalked; 2<sup>nd</sup> recurrent veins proximal to their middle, nervuli interstitial; postnervuli intercepted at basal 0.35; pterostigmata wide, length c.2.7x width, radial veins in their distal 0.7. 1<sup>st</sup> tergite length 3.0x width; postpetiolus length 1.6x width, smooth; 2<sup>nd</sup> tergite length 1.1x width; thyridia roundish. Ovipositor sheaths pilose, length 6.4x height and 0.77x length of hind metatarsi, narrowed in apical half.

Colour: Yellowish-red (including ocellar space and ovipositor sheaths). Palps, mandibles except teeth, genae, facial orbits, hind edges of pronotum, tegulae, and wing bases yellowish. Legs reddish-yellow; hind tibiae yellowish, slightly infuscate in apical 0.1. 2<sup>nd</sup> tergite with some reddish-brown lateral suffusion; tergites 3-6 with narrow yellowish hind margins. Pterostigmata brownish, paler proximally and distally.

Males and hosts unknown.

Distribution: Russia (Far East).

### Excluded species

#### *Mesochorus macrophyae* SCHWENKE, 1999: 70

Holotype: (♀) L. 30.8.1961 Alfeld Han.; ex *Macrophyia punctum-album* L. (Tenth.). (Munich).

**Taxonomical remark:** This species was included into the *M. fulvus*-group by SCHWENKE (1999). The colour of the body is mainly reddish-yellow, but the apices of hind tibiae and 1<sup>st</sup> and 2<sup>nd</sup> tergites are distinctly brownish darkened. In my opinion, this species belongs to the *M. declinans*-group sensu SCHWENKE (1999: 34). A detailed description and illustrations of this taxon will be given in a subsequent publication (RIEDEL 2018)

### Zusammenfassung

In der vorliegenden Arbeit werden die paläarktischen Arten der *M. fulvus*-Gruppe sensu SCHWENKE (Körper ganz rot, Hintertibien apikal nicht deutlich verdunkelt) der Gattung *Mesochorus* GRAVENHORST (Hymenoptera, Ichneumonidae, Mesochorinae) revidiert. Insgesamt werden 13 Arten als valide beschrieben und illustriert. Außerdem wird ein Bestimmungsschlüssel für diese Arten gegeben.

Sechs Taxa werden neu beschrieben: *Mesochorus caucasicus* nov.sp., *Mesochorus flavoorbitalis* nov.sp., *Mesochorus fulvooides* nov.sp., *Mesochorus lapponator* nov.sp., *Mesochorus propodealis* nov.sp. und *Mesochorus pseudolapponicus* nov.sp.

Neue Synonyme sind: *Mesochorus fulgurans* CURTIS, 1833 syn. nov. *Mesochorus minowai* UCHIDA,

1929; *Mesochorus laricis* HARTIG, 1838 syn. nov. *Mesochorus georgievii* SCHWENKE, 2004; *Mesochorus pelvis* SCHWENKE, 2002 syn. nov. *Mesochorus pectinellus* HORSTMANN, 2006. *Mesochorus macrophyae* SCHWENKE, 1999 wird in die *M. declinans*-Gruppe gestellt.

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I thank F. Guseleinert and M. Schwarz from the Biologiezentrum Linz/Austria and S. Schmidt from the Zoologische Staatssammlung München/Germany for their kind help and allowance to study their large and important collections of Mesochorinae. For their generous loan of their material I thank M. Shaw (Edinburgh/Scotland), D.R. Kasparyan (St. Petersburg/Russia), C. Zwakhals (Arkel/Netherlands) and S. Coruh (Erzurum/Turkey). For the loan of the Thomson types I thank C. Hansson (Lund/Sweden).

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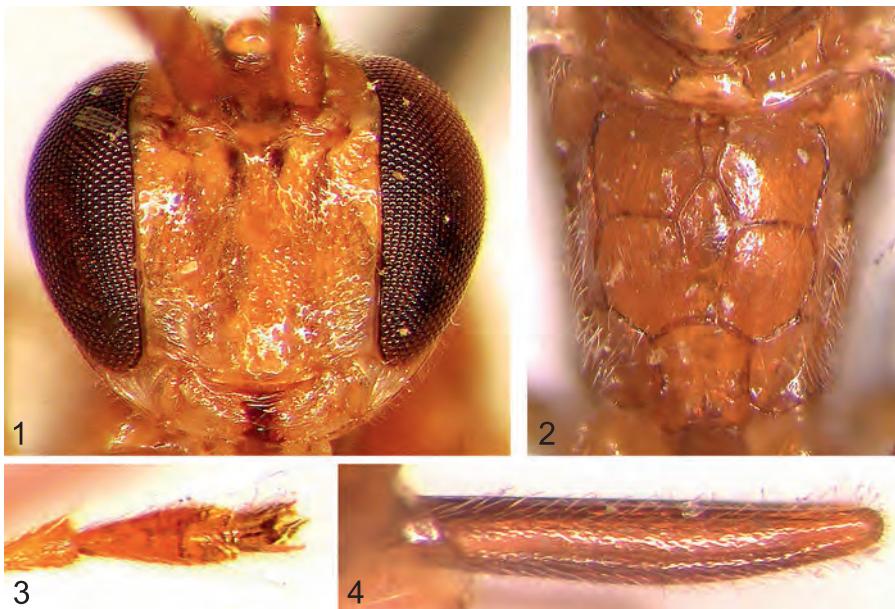
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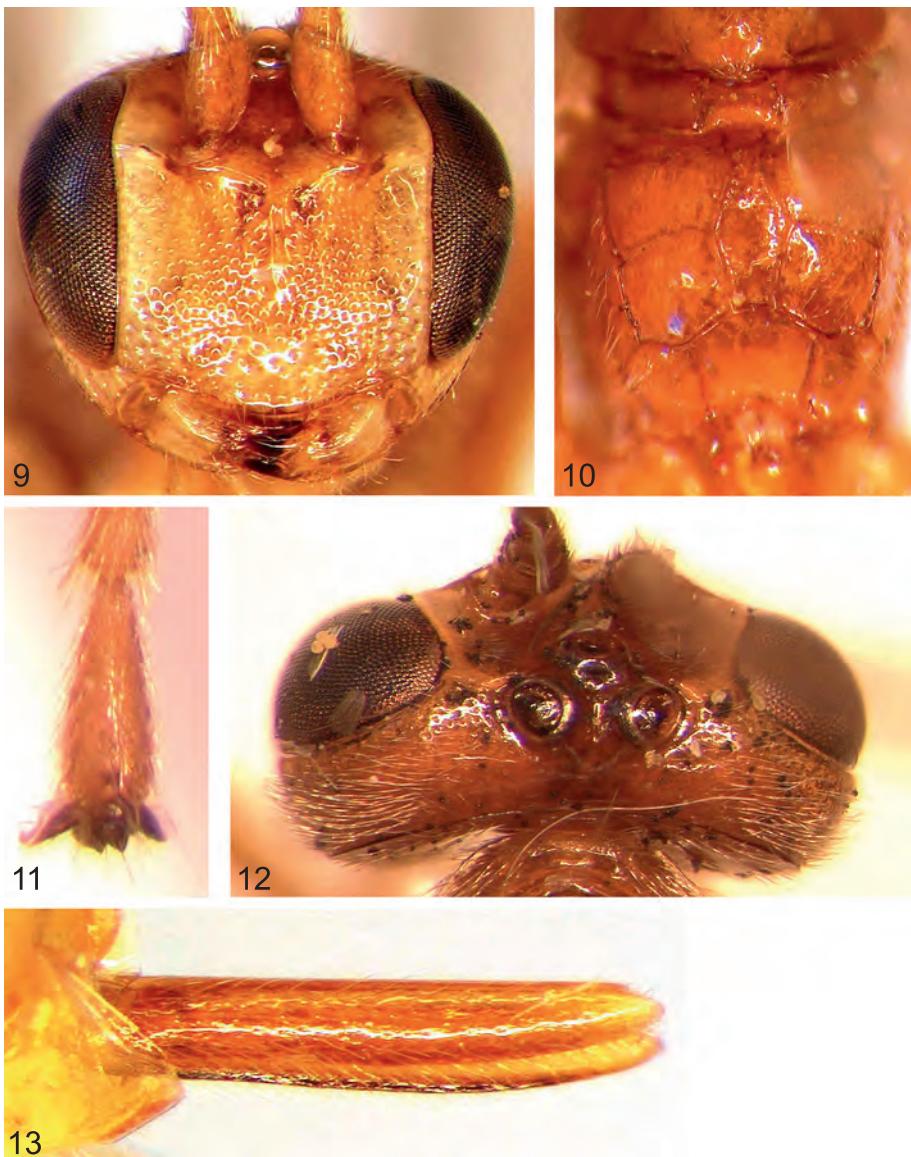
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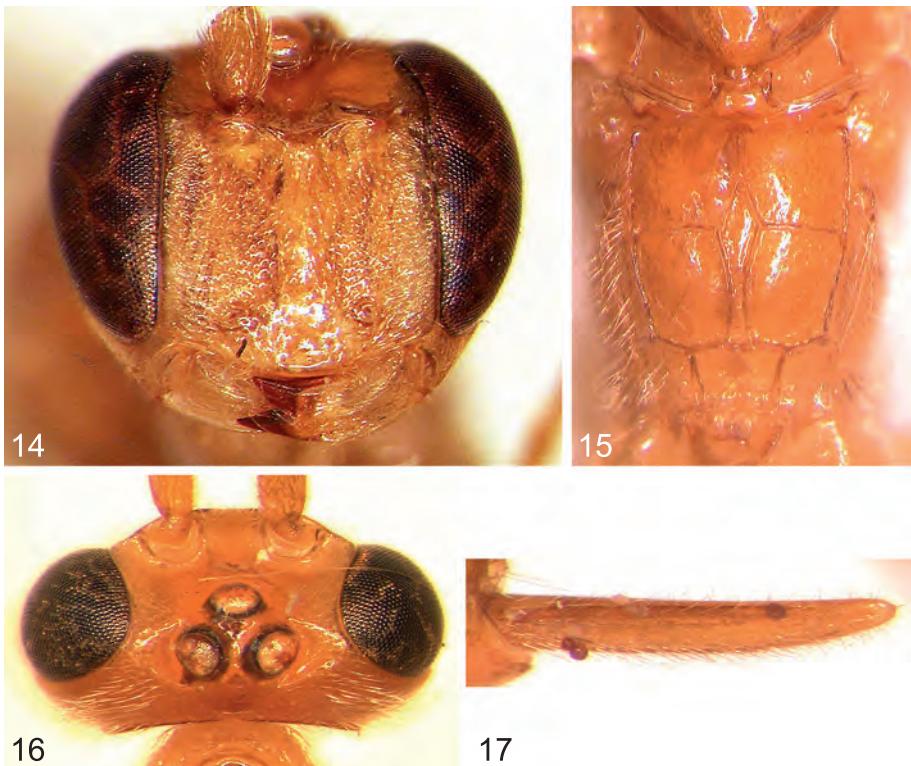
Figs 1-4: *Mesochorus agnellonis* SCHWENKE ♀ (holotypus): (1) face, (2) propodeum, (3) distal fore tarsomere, (4) ovipositor sheaths.



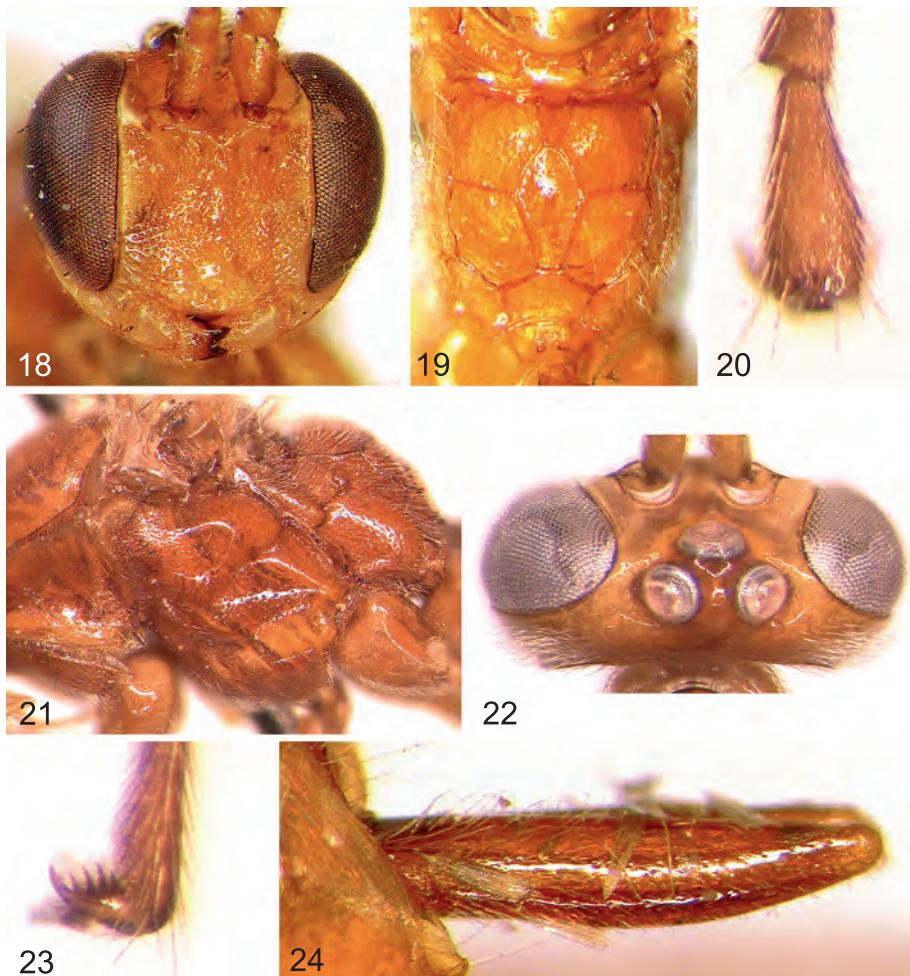
Figs 5-8: *Mesochorus britannicus* SCHWENKE ♀: (5) face, (6) propodeum, (7) distal fore tarsomere, (8) ovipositor sheaths.



Figs 9-13: *Mesochorus flavoorbitalis* nov.sp. ♀ (holotypus): (9) face, (10) propodeum, (11) distal fore tarsomere, (12) head, (13) ovipositor sheaths.



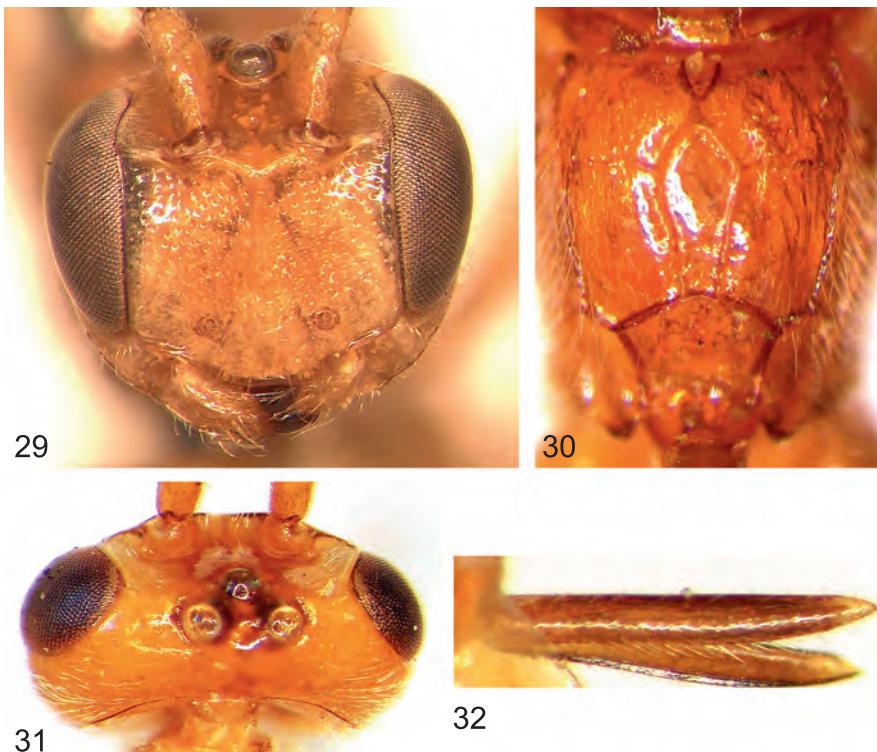
Figs 14-17: *Mesochorus fulgorator* HORSTMANN ♀: (14) face, (15) propodeum, (16) head, (17) ovipositor sheaths.



Figs 18-24: *Mesochorus fulgorans* CURTIS ♀: (18) face, (19) propodeum, (20) distal fore tarsomere, (21) mesopleuron, (22) head, (23) hind claw, (24) ovipositor sheaths.



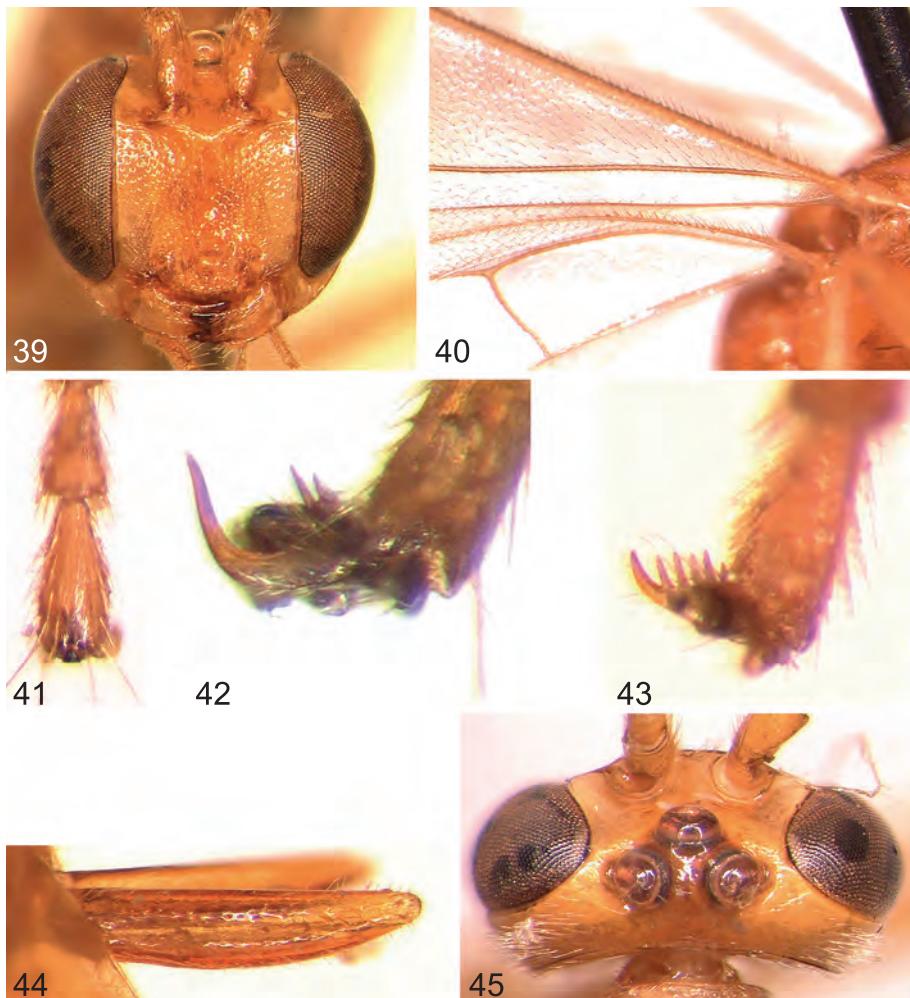
Figs 25-28: *Mesochorus fulvooides* nov.sp. ♀ (holotype): (25) face; (26) head, (27) hind claw, (28) ovipositor sheaths.



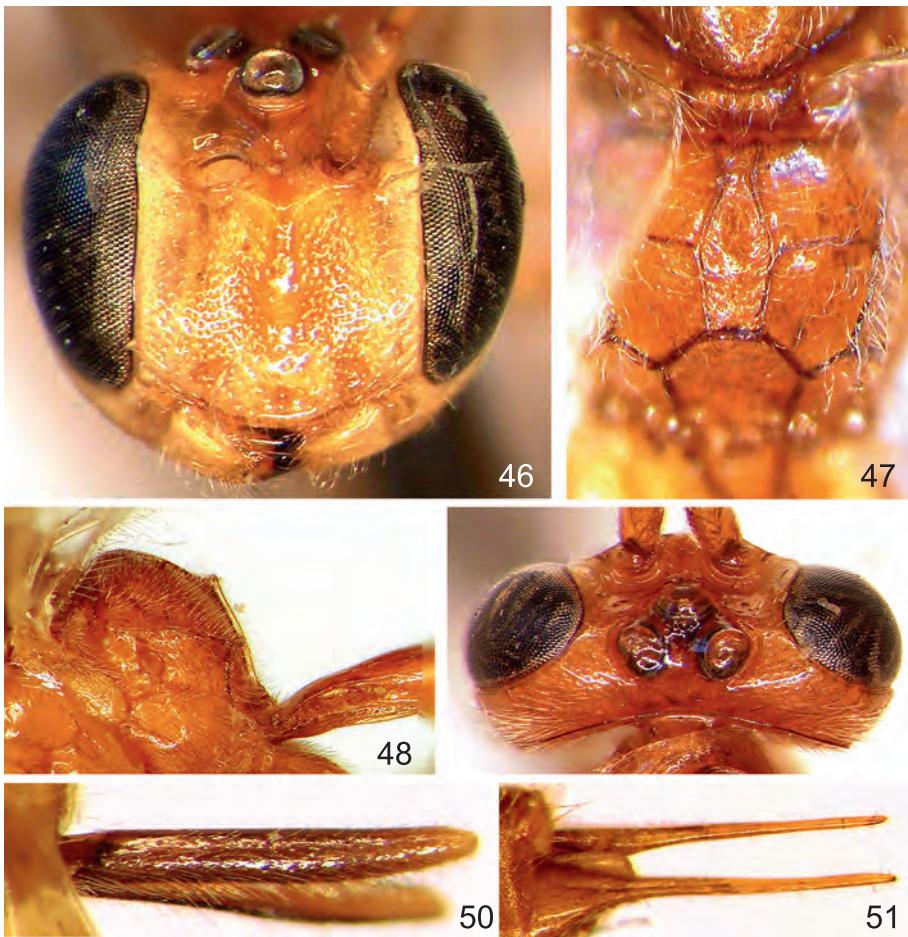
Figs 29-32: *Mesochorus heterodon* HORSTMANN ♀: (29) face, (30) propodeum, (31) head, (32) ovipositor sheaths.



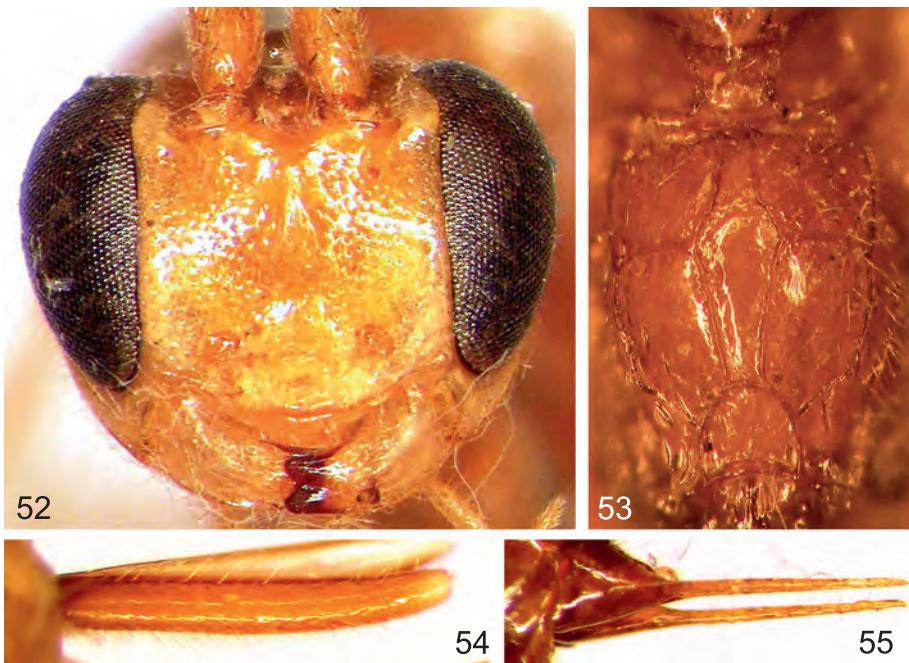
Figs 33-38: *Mesochorus laricis* HARTIG ♀: (33) face, (34) propodeum, (35) head, (36) hind claw, (37) distal fore tarsomere, (38) ovipositor sheaths.



Figs 39-45: *Mesochorus pelvis* SCHWENKE ♀: (39) face, (40) wing base, (41) distal fore tarsomere, (42) hind claw (♂), (43) hind claw, (44) ovipositor sheaths, (45) head.



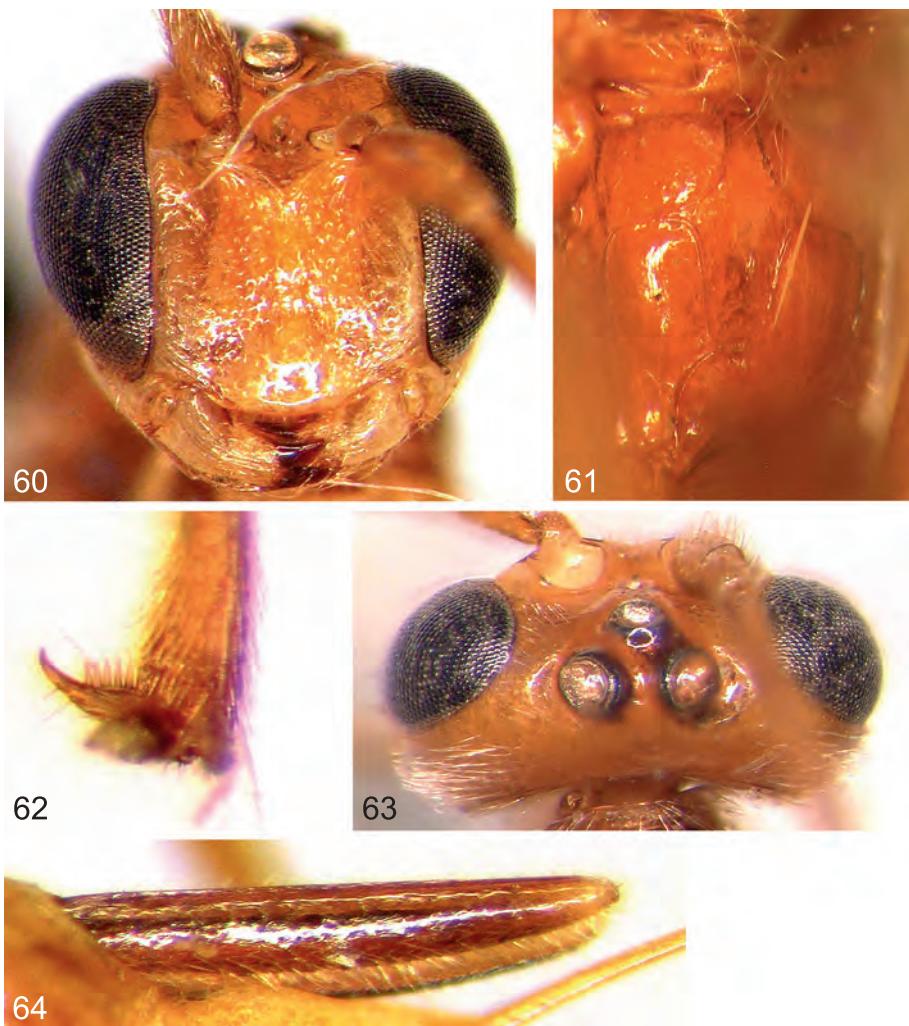
Figs 46-51: *Mesochorus propodealis* nov.sp. ♀: (46) head, (47) propodeum from dorsal, (48) propodeum from lateral, (49) head, (50) ovipositor sheaths, (51) clasper ♂.



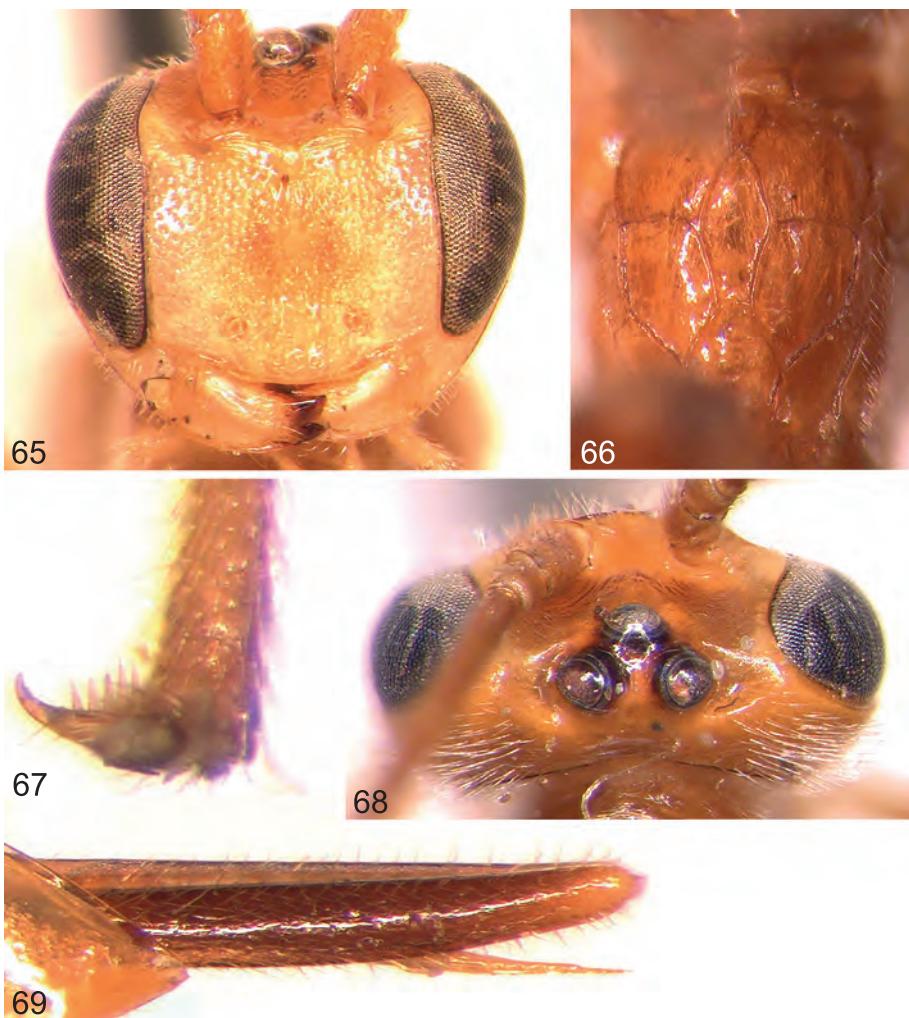
Figs 52-55: *Mesochorus lapponicus* THOMSON ♀: (52) face of lectotype, (53) propodeum of lectotype, (54) ovipositor sheaths, (55) clasper (♂).



**Figs 56-59:** *Mesochorus lapponator* nov.sp. ♀ (holotype): (56) face, (57) head, (58) ovipositor sheaths, (59) hind claw.



Figs 60-64: *Mesochorus pseudolapponicus* nov.sp. ♀ (holotypus): (60) face, (61) propodeum, (62) hind claw, (63) head, (64) ovipositor sheaths.



Figs 65-69: *Mesochorus caucasicus* nov.sp. ♀ (holotypus): (65) face, (66) propodeum, (67) hind claw, (68) head, (69) ovipositor sheaths.